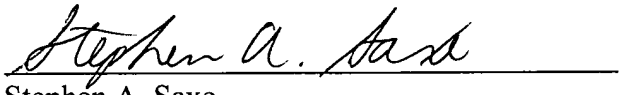
REMARKS

This application is filed as a divisional application. A reference to the parent application is inserted.

Claims 1-69 and 80-91 are canceled leaving claims 70-79 for examination. These latter claims were stated to be a single invention in the Restriction Requirement mailed 2 February 2000 for the parent application.

Amendments are made to the specification which amend the references to figures. The parent application was originally filed with informal drawings and included figures 10, 11 and 12. When formal drawings were prepared, each of figures 10-12 was revised to show portions A and B. The amendments to the specification are solely to make the specification conform to the formal drawings. It is urged that no new matter is presented.

Respectfully submitted,



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Amended Page 9, Paragraph on Lines 27-29 with marking to show changes made

[Figure 10 shows] Figures 10A-B show pictures of tissue samples which have been H&E stained using either the routine fixation and processing method (no ultrasound) (Figure 10A) or the new technique (with ultrasound) (Figure 10B).

Amended Page 10, Paragraph on Lines 1-3 with markings to show changes made

[Figure 11 shows] Figures 11A-B show pictures of tissue samples which have [under gone] undergone CD5 staining using the routine fixation and processing method (no ultrasound) (Figure 11A) or the new technique (with ultrasound) (Figure 11B).

Amended Page 10, Paragraph on Lines 4-6 with markings to show changes made

[Figure 12 shows] Figures 12A-B show tissue sections which have undergone in situ hybridization with poly-A mRNA using either the routine fixation and processing method (no ultrasound) (Figure 12A) or the new technique (with ultrasound) (Figure 12B).

Amended Page 18, Line 28, through Page 19, Line 6 with markings to show changes made

The sections from ultrasound treated tissue were excellent in histologic appearance as compared with their routine fixation and processing counterparts. The color balance in the H&E ultrasound section consistently demonstrated slightly more eosinophilia on the cytoplasm and more intense nucleus staining than the routine method ([Figure 10] Figures 10A-B). All ultrasound irradiated tissue blocks sectioned as well as control tissue blocks and no difference was detected in the sectioning and staining process. No evidence of cavitation tissue injury was noted in the ultrasound treated specimens under the conditions employed in this study. Ultrasound treated tissue sections following protease or MW antigen retrieval pretreatment showed no disintegration or deterioration. This indicates that tissue is fixed by formalin rather than by alcohol (dehydration only 10-15 minutes) according to Azumi's explanation (Azumi et al., 1990).

Amended Page 19, Lines 7 through 20 with markings to show changes made

The distribution of IHC for CD45, CD20, CD3, CD5, Bcl-2, cytokeratin, kappa and lambda from routine or ultrasound treated tissue sections is similar in this study. Several of the factors involved in the process of fixation were found to affect immunoreactivity of the antibodies used in this study. These include the duration and the speed of fixation and processing, and the duration and the concentration of primary and secondary (2°) antibody incubation. A short incubation with primary/2° antibodies/ABC (10 minutes/5 minutes/5 minutes) gave poor staining results compared to the overnight incubation. However, this method gave the best measurement to evaluate the condition of antigen preservation. The tissue from ultrasound irradiated fixation and processing significantly improved the immunoreactivity of the majority antibodies (CD3) in this study, and also dramatically reduced the incubation time. The requirement of concentration of primary antibodies (cytokeratin) for ultrasound treated tissue also was reduced more 20-fold compared to the routine treated tissue. Ultrasound high-speed fixed and processed tissues demonstrated the optimal fixation condition that was stained by CD5 even without MW antigen retrieval pretreatment ([Figure 11] Figures 11A-B).

Amended Page 19, Line 21, through Page 20, Line 7 with markings to show changes made

ISH is an excellent method for visualization and accurate detection of a specific gene (e.g., oncogene, tumor suppressor gene or viral gene) in individual, morphologically defined normal and neoplastic cells in both fresh and archival tumor specimens with light microscopy. mRNA ISH is one of the best methods to evaluate the condition of tissue mRNA preservation (Weiss and Chen, 1991; Harper et al., 1992). Since the poly d(T) probe presumably hybridizes to polyadenylated sequences of RNA, it would be expected that this probe would hybridize to the majority of mRNA species – only 10-30% of mRNA lack the polyadenylated tail. Ultrasound high-speed fixed and processed tissue dramatically improved the total polyadenylated mRNA preservation more than 20-fold in the periphery and more than 100-fold in the center of tissue as compared with the routine method ([Figure 12] Figures 12A-B). As a check on the validity of the poly d(T) used to detect mRNA, we performed parallel studies to detect a specific mRNA, using the probes recognizing kappa immunoglobulin light chain mRNA. The even distribution of kappa mRNA protected was

found in the tissue treated by the ultrasound method. However, in the tissue treated with the routine method, the periphery and center showed uneven distribution, i.e., there was good fixation of the tissue at the periphery and good preservation of mRNA at the periphery due to inactivation of RNAse in that region therefore showing good results, but the more interior regions of the tissue were not well fixed and mRNA was not well preserved and showed poor results.